

Mixtures Specialty Section Newsletter

Volume 4, Issue 1

September 2013

President's Message

David Mattie, PhD
MixSS President
Wright-Patterson Airforce Base



The Mixtures Specialty Section (MixSS) was approved by the SOT and began at the 2006 Annual Meeting in San Diego, CA. Mixture issues in toxicology and risk assessment are both interesting and challenging. Most of the fluids and materials I study are mixtures. Mixed exposures of chemicals and other physical stressors are also an area of growing interest. If you are a member of the MixSS, I thank you for your interest in mixtures toxicology and your support for our section. If you are not a member, I highly encourage you to join and work with us.

The objectives of the Mixtures Specialty Section are to: 1) serve as the focal point for interaction of members of the Society of Toxicology interested in mixtures toxicology; 2) develop, propose, and conduct programs and educational activities that emphasize the latest developments in mixtures toxicology; 3) relate those developments to the activities of the Society of Toxicology and to stimulate new growth in mixtures toxicology as it relates to the science of toxicology; 4) act as a resource to the Society in the area of the Section's interest.

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SOT 2013 Rewind

Cynthia Rider, PhD
MixSS Secretary/Treasurer
NIEHS/DNTP

San Antonio offered a great backdrop for celebrating the achievements of our colleagues, learning about mixtures, and catching up with fellow mixtures enthusiasts.

The meeting started out with excitement as we had the pleasure of seeing Moiz Mumtaz, founding MixSS President, accept the Arnold J. Lehman Award at the Sunday night award ceremony. Read more about Moiz and his contributions to the field at:

<http://www.toxicology.org/AI/AF/winners.asp#arnold>

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If you have any comments, suggestions, or other feedback about any activities of the Specialty Section, please contact myself or any of the MixSS Officers. I want to thank the executive board for their time, support and efforts for the MixSS. I hope to see everyone in Phoenix in March.

Dave Mattie

Old and new MixSS Officers met bright and early on Tuesday to discuss logistics of the reception, awards, the budget, Newsletter content, and membership. Priorities for the upcoming year will include gaining new members and developing excellent mixtures related programs for upcoming SOT meetings.

The **MixSS sponsored** Workshop Session entitled “**Cumulative Risk: Toxicity and Interactions of Physical and Chemical Stressors**” chaired by Cynthia Rider (NTP/NIEHS) and MaryJane Selgrade (ICF International; standing in for Jane Ellen Simmons) featured talks from MaryJane Selgrade, Thais Morata (NIOSH), Christopher Gordon (US EPA), Kim Boekelheide (Brown University) and Ken Sexton (University of North Carolina Chapel Hill). The workshop focused on describing what is known about the interactions among physical stressors (including infectious disease, radiation, heat, noise, and sunlight) and chemical stressors and thoughts on potentially including physical stressors in cumulative risk assessments. A summary of the workshop was submitted to Toxicological Sciences as a Forum article.

Other programs **endorsed by the MixSS** covered diverse topics of interest to the mixtures community:

Workshop Session: Inhaled Mixtures: A Mode-of-Action Framework Applied to the Criteria Air Pollutants
A symposium session titled

Historical Highlights Session: Diesel and Gasoline Exhaust and Cancer

Symposium Session: From Inhaled Particles to Cardiovascular Disease and Toxicity: Evidence from Studies in Volunteers, Experimental Animals, and Cell-Based Systems

Regional Interest Session: Assessment of Environmental, Dietary, and Biological Risk Factors Impacting Liver Cancer Incidence in Texas

Symposium Session: Role of Air Pollution as a Risk Factor for Central Nervous System Diseases and Disorders

Symposium Session: Translational Methods to Assess the Safety of Natural Health Products, Including Traditional Medicines and Dietary Supplements

The **MixSS Reception** took place on Tuesday night and provided an excellent opportunity to catch up with old friends, honor award winners, and discuss development of mixture-related program submissions for 2014.



Past President Michael Dourson presenting Ken Wallace with a plaque of appreciation for his service as President



Danielle Carlin and Moiz Mumtaz planning their next SOT mixtures workshop



Graduate student award winner Dana Lauterstein (center) and friends celebrate her achievement

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Jose Zavala (foreground), one of our top 10 abstract winners, and Ken Sexton, former MixSS Councilor, mingle with colleagues

Post reception mixtures outing in San Antonio



Heather Henry, Chris Gennings, Danielle Carlin, Moiz Mumtaz, Tom Webster, and Cynthia Rider engage in a human study of mixtures



Tom Webster befriends a San Antonio native

MixSS Award Winners

Graduate Student Award

Dana Lauterstein (New York University)
Effects of a Smokeless Tobacco, Gutkha on
Neurotransmitter Levels and Associated Parameters in
the Mouse Brain



Post doctoral Award

Rhiannon David (Imperial College London)
Mixtures of Benzo[a]pyrene with Direct or Indirect
Acting Mutagens Have a Nonmonotonic Mutation Profile



Best Mixtures Abstract

(selected from the top 10 abstract pool)

Daniel Borg (Karolinska Institutet)
Individual and Cumulative Health Risk Assessment of 17
PFASs in the Swedish Population



Big thanks to Wiley for sponsoring the MixSS graduate student and post doc awards and to Past President Michael Dourson (TERA) for presenting the awards!

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Top 10 Abstracts

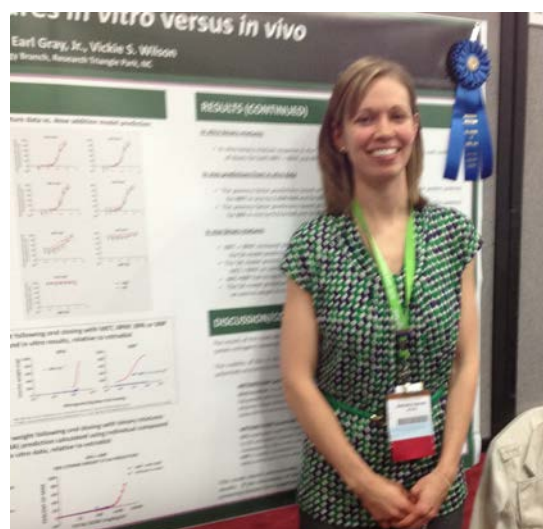
(in alphabetical order by first author)

Authors: G.V. Alexeeff, J. Faust, L. August, R. Cendak, W. Wieland, T. Kadir, L. Cushing, K. Randles, C. Milanes, L. Zeise; Title: California Communities Environmental Health Screening Tool (CalEnviroScreen); Abstract #878

Authors: D. Borg, B.O. Lund, N.G. Lindquist, H. Håkansson; Title: Individual and Cumulative Health Risk Assessment of 17 PFASs in the Swedish Population; Abstract #570

Authors: J. Gruber, R.D. Patel, J.E. Rager, A.P. Sanders, S. Edwards, J.E. Gallagher, R.C. Fry; Title: Exposure to Metals Mixtures: Genomic Alterations of Infectious Disease Response Pathways in Children Exposed to Environmental Metals; Abstract #698

Authors: B. Hannas, J.R. Furr, L.E. Gray, V.S. Wilson; Title: Comparison of Estrogen Mixtures *In Vitro* vs *In Vivo*; Abstract #2111

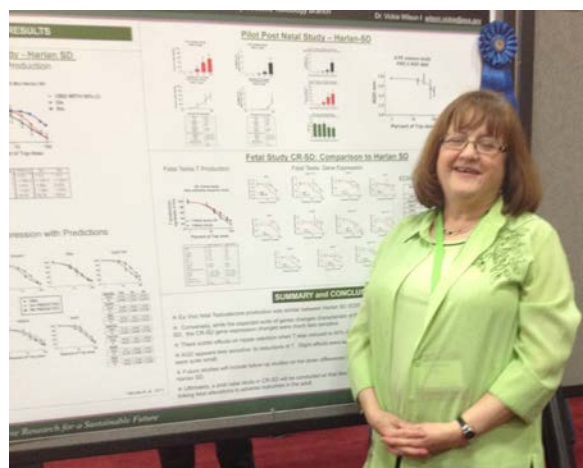


Bethany Hannas

Authors: W. Lichtensteiger, C. Bassetti-Gaille, O. Faass, J. Boberg, S. Christiansen, U. Hass, A. Kortenkamp, M. Schlumpf; Title: Effects of Different Endocrine Disruptor Mixtures on Gene Expression in Neonatal Rat Brain Regions: Focus on Developing Excitatory Synapses; Abstract #1383

Authors: A.K. Tiwary, R.I. Magaw, D.A. Zemo, K.T. O'Reilly, R.E. Mohler, K.A. Synoweic; Title: Reference Dose (RfD)-Based Chronic Human Health Hazard Ranking System for Complex Mixtures—Assessment of Polar Nonhydrocarbons in Groundwater at Biodegrading Petroleum Sites; Abstract #565

Authors: V.S. Wilson, J.R. Furr, C. Lambright, B. Hannas, L.E. Gray; Title: Cumulative Effects of a 9 Phthalate Mixture on Charles River-Sprague-Dawley (CR-SD) Fetal Rat Testis Testosterone (T) Production and Gene Expression; Abstract #2134



Vickie Wilson

Authors: C.J. Wolf, C. Rider, C. Lau, B.D. Abbott; Title: Evaluation of Additivity of Binary Mixtures of Perfluoroalkyl Acids (PFAAs) on Peroxisome Proliferator-Activated Receptor-Alpha (PPAR α) Activation *In Vitro*; Abstract #564

Authors: K. Zaccaria, P. McClure; Title: Associations between Carcinogenic and Immune Suppression Activities of PAHs: Insights into Improving Cancer Risk Assessment for PAH Mixtures; Abstract #1966

Authors: J. Zavala, K. Lichtveld, S. Ebersviller, G.W. Walters, H.E. Jeffries, Kenneth G. Sexton, W. Vizuite, I. Rusyn, I. Jaspers; Title: Development of a Portable *In Vitro* System for Lab and Field Aerosol Exposure Studies; Abstract #574

MixSS Continues Joint Sponsorship of Webinars with RASS

Kembra Howdeshell

MixSS Councilor
NIEHS/DNTP

The Executive Committee is pleased to report that the Mixtures SS continues its co-sponsorship of two webinars per year in the SOT Risk Assessment Specialty Section (RASS) webinar series on topics that are of mutual interest to both groups. Dr. Jack Harkema, DVM, PhD, of Michigan State University, Lansing MI was the invited speaker of the last jointly sponsored webinar of the 2012-2013 series held on April 10, 2013. His presentation was titled "Interface of Health Effects Caused by CardioMetabolic Syndrome and Exposures to Air Pollutant Mixtures."



The first jointly-sponsored webinar of the 2013-2014 series featured Dr. Bette Meek, PhD, of the University of Ottawa, Canada, on September 11, 2013. Dr. Meek presentation was titled "International Experience in Addressing Combined Exposures: Increasing the Efficiency of Assessment". The presentation derives from her Nov 9, 2012 publication (epub ahead of print) in *Toxicology* (PMID: 2314673).



Both Dr. Harkema's and Dr. Meek's presentations were very well attended and the slides can be viewed at the RASS webinar website

(<http://www.toxicology.org/ISOT/SS/RiskAssess/downloads.asp>)

Call for suggestions of future webinar speakers

The Mixtures Specialty Section Executive Committee requests suggestions for the January 2014 and future webinars with the RASS on topics related to mixtures research or issues that would also be pertinent to both groups. Please submit your suggestions by email to Kembra Howdeshell

(howdeshellk@niehs.nih.gov) by October 15, 2013.

Thank you for your past efforts in identifying excellent speakers!

NOMINATE THE NEXT MixSS OFFICERS

Nominations are open for the positions of vice president-elect, councilor, post doctoral representative, and graduate student representative. Please consider nominating someone whom you think will help lead the area of combined exposures/chemical mixtures/multiple stressors research for SOT over the next 5 years. Self nominations are welcome. Please contact Ken Wallace (kwallace@d.umn.edu), with any nominations or questions.

If you would like to provide an opinion piece for the MixSS Newsletter (800 words or less) or get the word out about mixtures-related events, contact Cynthia Rider (cynthia.rider@nih.gov)

Upcoming Events

The **Superfund Research Program 2013 Annual Meeting** will be held in **Baton Rouge, Louisiana, October 15-17, 2013**. Registration is now open!



From the website:

The Superfund Research Program (SRP) supports multidisciplinary research to address human and environmental health challenges related to Superfund and other hazardous waste sites. The SRP annual meeting brings together researchers, trainees, and administrators supported by the program, representatives from partner agencies, including the U.S. Environmental Protection Agency (USEPA) and the Agency for Toxic Substances and Disease Registry (ATSDR), and other interested individuals to discuss new research, technology, communication, and community engagement in critical areas related to the SRP mission. In addition, SRP grantees and trainees will have many opportunities for networking with SRP trainee alumni, SRP staff (program, review, management), and other SRP Center Directors and Project/Core Leaders.

There will be a dedicated mixtures session on October 16, titled “**Emerging Contaminants and Pollutant Mixtures**” chaired by Stephania Comier (Louisiana State University) and Christopher Olivares (University of Arizona), with speakers including Veronica Vieira (Boston University), Robert Tanguay (Oregon State University), Nour Abdo (University of North Carolina), Kurt Varner (Louisiana State University), James Rice (Brown University and University of Kentucky), Jim Shine (Harvard University)

Find out more at:

<http://www.srp.lsu.edu/conf/index.html>

ANSES (French Agency for Food, Environmental and Occupational Health & Safety) and other European partners are organizing a conference titled “**Chemical mixtures: Challenges for research and risk assessment**”, **December 10-11, Paris, France**.

From the website:



The conference will address...

- Recent and current knowledge on the effects of chemical mixtures on human health taking into consideration the various classes of chemical substances, the different exposure routes and the existing experimental data
- Risk assessment methods of chemical mixtures
- The sources of uncertainties and main knowledge gaps on which future research should focus
- The validity of models to predict combined effects, experimental proof and practical use that can be made of them
- Opportunities for risk assessment of chemical mixtures (including the issue of cumulative vs. aggregate risk assessment)

Find out more at:

<http://www.anses.fr/en/content/chemical-mixtures-challenges-research-and-risk-assessment>

Gulf of Mexico Oil Spill & Ecosystem Science Conference, January 26-29, Mobile, Alabama

Conference registration and abstract submission is now open.

Find out more at:

<http://gulfofmexicoconference.org/>